PHYSICAL AND CHEMICAL CHANGE

ENGAGEMENT

Chemistry is the study of matter and the changes it undergoes. These changes can be broken down into two classes – physical changes and chemical changes. In a physical change, one or more physical properties of a substance are altered. Examples of such physical properties include size, shape, color, and physical change.

A chemical change results in the formation of one or more "new" substances. These new substances differ in chemical properties and composition from the original substance. The rusting of iron and the burning of paper are two examples of chemical change.

This experiment will help you to recognize each type of change when it occurs.

PURPOSE

Recognize and distinguish between chemical and physical changes.

EQUIPMENT

lab balance
lab burner
5 test tubes (18 x 150-mm)
test tube rack
test tube holder
Watch glass
glass square
microspatula
dropper pipet
mortar and pestle
magnet
insulating pad
safety goggles
lab apron or coat

MATERIALS

copper sulfate pentahydrate ($CuSO_4 5H_2O$)
sodium chloride (NaCl)
hydrochloric acid (6 *M* HCl)
silver nitrate (0.1 *M* $AgNO_3$)
sulfur (S), powered
iron filings (Fe)
magnesium ribbon (Mg)
paper (5 cm x 10 cm)
birthday candle
matches

SAFETY

Note the caution alert symbols here and beside certain steps in the "procedure." Refer to page xi to review the precautions associated with each symbol.

When heating a substance in a test tube, be sure the open end of the tube points *away from* yourself and others.

Handle all acids with *extra caution*. Always wear safety goggles when handling acids. Report all acid spills to your teacher, and flush with cold water and dilute solution of sodium bicarbonate ($NeHCO_3$)

Give heated glass ample time to cool before handling it. *Glass retains heat*. Tie back long hair and secure loose clothing before working with an open flame. Wear safety goggles and a lab apron or coat at all times when working in the lab.